

# **Environmental Health**

## **General Information**

- Environmental health focuses on protecting against chemical, physical and biological hazards in our communities that people are exposed to and which have potential adverse health effects.
- Adolescents may be exposed to contaminants in the environment through breathing the air, ingesting food or water, or playing and working in contaminated soils. The extent of exposure to any environmental hazard is highly variable and depends on a number of factors including the concentration of the contaminant in the environment, individual behaviors, and how the contaminant is taken into the body.
- Environmental health issues facing adolescents are similar to environmental health issues facing people of all ages.

## **Pesticide-related illness**

- In Washington, children are permitted to work in agriculture, but the number of hours is restricted. The minimum age adolescents can start working is 14; however, children ages 12-13 can work during non-school months (June 1-Labor Day) hand harvesting berries, bulbs, cucumbers, and spinach). Children ages 16-17 can work 50 hours a week during all school vacations, and 28 hours a week during the school year. Children ages 14-15 are permitted to work 40 hours a week June 1- Labor Day and 21 hours a week the rest of the year.<sup>1</sup>
- Washington is one of eight states which actively track and investigate pesticide-related illnesses. Washington does not track all pesticide exposures, just acute illnesses only. Approximately 40% of all identified cases occurred among workers in agricultural settings.<sup>2</sup>
- For Washington youth ages 11-19, in 2002-2003, there were confirmed 23 pesticide-related acute illnesses, of which 11 were related to drift or direct exposure from farm spraying.
- Another source of exposure to pesticides is take-home exposures. Pesticide exposures can be limited if farm workers change out of work clothes when they come home and if work clothes are washed separately from the family laundry.

## **Home exposure to Methamphetamine labs<sup>3</sup>**

- From October 2003-October 2004, there were 576 clandestine Washington State methamphetamine labs responded to and cleaned out by the state patrol compared to 652 in the prior year.
- As of October 2003, there were a total of 23 documented cases of methamphetamine toxicity in children less than age 15, up from 17 in the previous 12 month period, an increase of 35%.<sup>4</sup>

---

<sup>1</sup> Washington State Department of Labor and Industries. What Hours are Minors in Agricultural Jobs Permitted to Work. Available: <http://198.187.3.11/WorkplaceRights/TeenWorkers/default.asp>

<sup>2</sup> Health of Washington State 2002, Environmental Health Section, Washington State Department of Health

<sup>3</sup> Data provided by Carolyn Comeau, Washington State Department of Health

<sup>4</sup> Includes only cases identified from clandestine methamphetamine labs responded to by the Washington state patrol lab

## ***Sun Exposure***<sup>5</sup>

- Ultraviolet (UV) radiation from sun exposure is known to be the leading cause of skin cancer. Skin cancer is the most common cancer in the US and incidence rates are rising in Washington. The most serious form of skin cancer, melanoma, is the fifth leading cancer in Washington State.
- Skin cancer is largely preventable when sun protection measures (e.g., sunscreen, protective clothing) are used consistently. In addition, most skin cancers are curable if detected in the earliest stages.
- The use of sun protection varies in the population. For example, among people age 18 to 34, 44% ( $\pm$  4%) reported that they always or nearly always use one or more form of sun protection compared with 73% ( $\pm$  4%) of people age 65 and older. Men are less likely than women to report that they always or nearly always use one or more forms of sun protection. People in rural areas of Washington are more likely than people in urban areas to report that they always or nearly always use at least one of the recommended methods of sun protection.

## ***Air Quality***

### **Outdoor Air Quality**

- Adolescents frequently spend more time at outdoor activities than adults. Poor outdoor air quality can contribute to asthma. Outdoor air agents known to cause or aggravate asthma include ozone, fine particulate matter, carbon monoxide, nitrogen oxides, and sulfur dioxide.<sup>6</sup>
- According to a recent report on asthma in Washington State, Washington's outdoor air quality has improved over the last ten years and is generally considered to be moderate to good. However, certain parts of the state remain at risk for poor air quality. Ozone has been previously identified as an issue for the Puget Sound and Vancouver areas; particulate matter as an issue for Spokane, Yakima and Wallula.<sup>6</sup>
- Vehicles are the leading contributors to poor outdoor air quality. Other factors that contribute include industry and agriculture, woodstoves, and outdoor burning.

### **Indoor Air Quality**

- A survey of selected classrooms in Washington and Idaho public schools found that a high proportion had poor air quality or risk factors for poor air quality. About 26% of the portable buildings had turned off their ventilation systems and 10% of portable buildings had no mechanical ventilation system. Two thirds of the schools had faulty exhaust fans. About half reported water stained ceiling tiles, which could be evidence of dampness, a risk factor for asthma and mold. The survey also asked about preventive measures: less than 10% of the schools ventilated copiers to the outdoors and only about 5% had a carbon monoxide alarm located around combustion equipment. About 43% of the classrooms in the survey had poor air quality as measured by carbon dioxide concentration. Poor air quality (elevated carbon dioxide concentrations) was associated with a 10%-20% increase in student absences.<sup>6</sup>
- Indoor air quality can impact asthma. Indoor air agents known to cause or aggravate asthma include allergens from dust mites, cockroaches, dogs and cats, second hand tobacco smoke, and indoor chemical exposures.<sup>7</sup>

---

<sup>5</sup> Comprehensive Cancer Report, Washington State Department of Health, 2004-2008. Report available at: [http://www.doh.wa.gov/ccr/pdf/WSCCC\\_plan.pdf](http://www.doh.wa.gov/ccr/pdf/WSCCC_plan.pdf)

<sup>6</sup> The Burden of Asthma in Washington State. Washington State Department of Health, June 2005

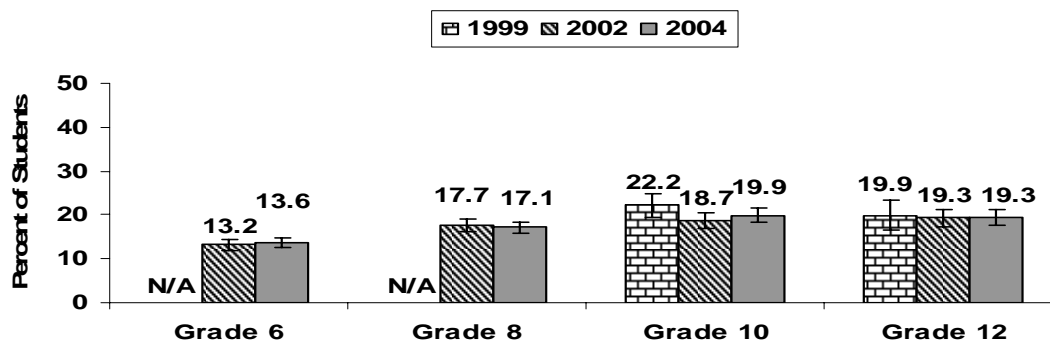
## Asthma

## Demographics:

Table 47. Ever been told by health professional have asthma	
<b>Grade</b> (p<0.001)	<b>WA</b>
Grade 6	<b>% (95% CI)</b>
Grade 8	<b>13.6 (12.7,14.6)</b>
Grade 10	<b>17.1 (15.9,18.3)</b>
Grade 12	<b>19.9 (18.3,21.5)</b>
<b>Gender (10<sup>th</sup> grade)</b> (p=0.15)	
Male	<b>18.8 (16.8,20.9)</b>
Female	<b>20.7 (18.6,22.9)</b>
<b>Race/ Ethnicity (10<sup>th</sup> grade)</b> (p=0.02)	
White	<b>20.8 (18.8,22.9)</b>
Black	<b>20.5 (15.0,27.2)</b>
American Indian /Alaska Native	<b>24.2 (15.5,35.9)</b>
Asian	<b>17.6 (13.0,23.5)</b>
Hispanic	<b>12.4 (8.5,17.9)</b>
Hawaiian/ Pacific Islander	<b>29.5 (21.7,38.8)</b>
Other	<b>17.1 (12.2,23.6)</b>
More than One Race	<b>19.0 (14.3,24.8)</b>
<b>Disability</b> – Data not provided here since having a chronic condition like asthma is part of the screener for determining a youth with a disability	
<b>Rural- Urban Residence (10<sup>th</sup> grade)</b> (p=0.11)	
Urban Core	<b>19.3 (17.6,21.1)</b>
Urban Rural Fringe	<b>20.8 (17.1,25.1)</b>
Large Town	<b>25.2 (20.5,30.7)</b>
Small Town / Isolated Rural	<b>17.5 (13.0,23.2)</b>

Source: Healthy Youth Survey 2004

## Trend Data:

Figure 37: Percent WA Students Reporting They Had Ever Been Told They Had Asthma By Grade and Year<sup>8</sup><sup>7</sup> The Burden of Asthma in Washington State. Washington State Department of Health, June 2005<sup>8</sup> Washington State Office of Superintendent of Public Instruction, Department of Health, Department of Social and Health Services, and Department of Community, Trade, and Economic Development and RMC Research Corporation. Washington State Healthy Youth Survey 2004: Analytic Report

**Background:**

- Asthma is a chronic inflammatory respiratory disease associated with both individual risk factors such as obesity, allergies, and early inhaled intoxicant use, as well as environmental risk factors such as outdoor and indoor air quality.
- **Healthy People 2010 objectives** are to reduce deaths from asthma for children ages <5 and 5-14 to no more than 0.1 per 100,000, and for ages 15-34 to no more than 0.2 per 100,000 and to reduce asthma hospitalizations for ages <5 to no more than 250 per 100,000 and for ages 5-64 to no more than 77 per 100,000.<sup>9</sup>
- In 2002, there were 466 asthma-related hospitalizations for Washington youth ages 10-19 for a rate of 52.3 per 100,000. From 2000-2002 there were a total of 6 asthma-related deaths among Washington youth ages 10-19 for a rate of 0.2 per 100,000.<sup>10</sup>
- **Current asthma:** In 2004, about 9-10% of 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders report having current asthma. About 66% of Washington youth with current asthma in grades 8, 10, and 12 have mild intermittent asthma, while 18% have moderate or severe persistent asthma.<sup>11</sup>

**Table 48. Related Asthma Questions**

	<b>Grade 6</b>	<b>Grade 8</b>	<b>Grade 10</b>	<b>Grade 12</b>
During past 12 months, had asthma attack or took asthma medication (p<0.001)	<b>8.7</b> (8.1,9.4)	<b>19.2</b> (18.1,20.5)	<b>22.1</b> (20.3,23.9)	<b>23.6</b> (22,25.3)
During past 12 months, visited emergency room or urgent care center because of asthma (p=0.8 )		<b>3.6</b> (2.8,4.6)	<b>4.0</b> (3.3,4.9)	<b>3.7</b> (2.8,4.9)
Missed at least one school day because of asthma (p=0.2)		<b>4.7</b> (3.8,5.8)	<b>5.3</b> (4.2,6.5)	<b>3.9</b> (3.2,4.9)

Source: Healthy Youth Survey 2004

**WA Prevalence:**

- **Lifetime:** In 2004, about 14% of Washington 6<sup>th</sup> graders, 17% of 8<sup>th</sup> graders, 20% of 10<sup>th</sup> graders, and 19% of 12<sup>th</sup> graders reported they had ever been told by a health professional they had asthma.
- **Current Asthma:** For all grades surveyed, about 8.7% had current asthma.<sup>11</sup>

**U.S. Prevalence:** Current Asthma: In 2003, nationally about 6% of 12-17 year olds had current asthma.

**Trends:** There were no significant changes in Washington 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grade students reporting they had ever been told they had asthma from 1999 to 2004.

**Disparities:**

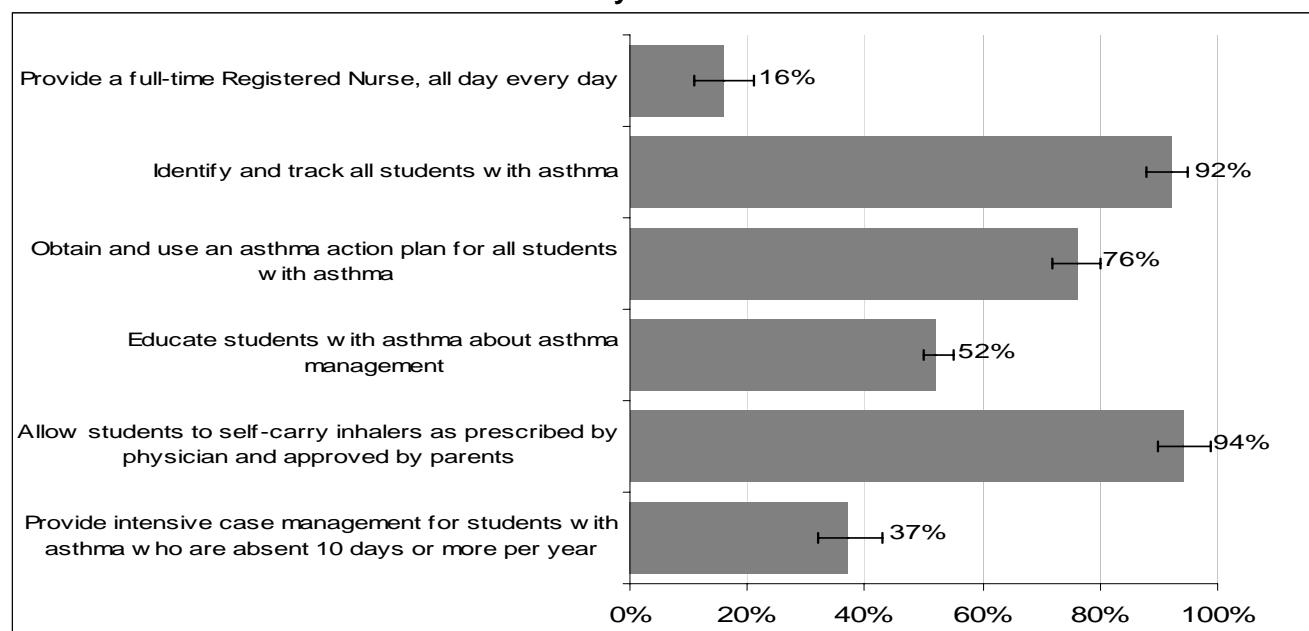
- **Grade:** Older students were more likely than 6<sup>th</sup> graders to report they had ever been told they had asthma (p<0.001) (Table 47).
- **Race/ Ethnicity:** There were significant differences in students reporting they had ever been told they had asthma by race/ethnicity (p =0.02) (Table 47). See technical notes on p values and confidence intervals for further use of the data in Table 47.

<sup>9</sup> Department of Health and Human Services (US). Healthy People 2010: Understanding and Improving Health. 2nd edition. Washington, DC: US Government Printing Office; November 2000.

<sup>10</sup> Death Certificate and Hospitalization Data, Washington State Department of Health, generated by VISTAphW 5.0

<sup>11</sup> Burden of Asthma in Washington State, Washington State Department of Health June 2005.

**Figure 38. Prevalence of asthma-related policies and practices, among Washington State secondary schools<sup>12</sup>**



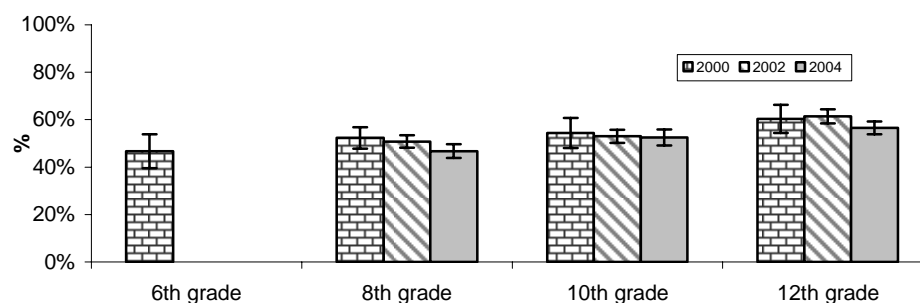
Source: 2004 Washington State School Health Education Profile (SHEP). [Note: Percentages are of schools, not students.]

<sup>12</sup> Burden of Asthma in Washington State, Washington State Department of Health June 2005.

**Secondhand Smoke****Demographics:**

<b>Table 49. Exposure to Secondhand Smoke in Either a Room or a Car in Past 7 Days</b>	
<b>Grade (p&lt;0.001)</b>	<b>WA % (95% CI)</b>
Grade 6	-
Grade 8	<b>46.7</b> (43.8,49.6)
Grade 10	<b>52.5</b> (49.1,56.0)
Grade 12	<b>56.6</b> (53.8,59.3)
<b>Gender (10<sup>th</sup> grade) (p=0.08)</b>	
Male	<b>50.8</b> (46.8,54.7)
Female	<b>53.9</b> (49.9,57.9)
<b>Race/ Ethnicity (10<sup>th</sup> grade) (p=0.003)</b>	
White	<b>52.8</b> (49.1,56.4)
Black	<b>57.0</b> (46.1,67.3)
American Indian /AN	<b>67.7</b> (54.3,78.8)
Asian	<b>39.8</b> (29.8,50.8)
Hispanic	<b>46.5</b> (40.4,52.7)
Hawaiian/ Pacific Islander	<b>52.8</b> (38.0,67.2)
Other	<b>57.4</b> (50.8,63.8)
More than One Race	<b>60.3</b> (51.4,68.6)
<b>Disability – 10<sup>th</sup> grade (p &lt;0.001)</b>	
Disability	<b>64.7</b> (60.7,68.4)
No disability	<b>48.9</b> (45.0,52.8)
<b>Rural- Urban Residence (10<sup>th</sup> grade) (p=0.6)</b>	
Urban Core	<b>51.9</b> (47.3,56.6)
Urban Rural Fringe	<b>53.8</b> (45.9,61.5)
Large Town	<b>57.5</b> (51.3,63.4)
Small Town / Isolated Rural	<b>50.3</b> (42.1,58.5)

Source: Healthy Youth Survey 2004

**Trend Data:****Figure 39. Percent Exposed to Secondhand Smoke in Room or Car by Grade and Year, WA Youth Surveys<sup>13</sup>**

<sup>13</sup> Washington State Office of Superintendent of Public Instruction, Department of Health, Department of Social and Health Services, and Department of Community, Trade, and Economic Development and RMC Research Corporation. Washington State Healthy Youth Survey 2004: Analytic Report

**Background:**

- **The Healthy People 2010 objective** is to reduce the proportion of nonsmokers exposed to environmental tobacco smoke to 45%.<sup>14</sup>
- **Live with Smoker:** In 2004, one third of students in the 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grade said they lived with someone who smoked cigarettes. Youth who lived with someone who smoked were significantly more likely to be current smokers. About 8% of 10<sup>th</sup> graders who did not live with a smoker reported they had smoked in the past 30 days compared to 22% of 10<sup>th</sup> graders who lived with a smoker.
- In 2004, for 10<sup>th</sup> graders who were nonsmokers, about 47% were exposed to secondhand smoke in the past 7 days.
- **Perception of Harm from Secondhand Smoke:** About two thirds of 6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders said they thought second hand smoke was definitely harmful. Girls were significantly more likely than boys to report that secondhand smoke was definitely harmful.

<b>Table 50. Related Smoking Indicators</b>				
	<b>Grade 6</b>	<b>Grade 8</b>	<b>Grade 10</b>	<b>Grade 12</b>
Live with Smoker (p<0.2)		<b>33.7</b> (30.8,36.7)	<b>32.3</b> (29.3,35.5)	<b>29.1</b> (26.3,32.0)
Perception of Harm from Secondhand Smoke (p<0.000)	<b>69.1</b> (67.7,70.4)	<b>65.7</b> (64.0,67.4)	<b>65.4</b> (63.1,67.7)	<b>69.2</b> (66.7,71.5)

Source: *Healthy Youth Survey 2004*

**WA Prevalence:** In 2004, about 47% of 8<sup>th</sup> graders, 53% of 10<sup>th</sup> graders, and 57% of 12<sup>th</sup> graders reported they had been in a room or car with someone smoking cigarettes in the past week.

**U.S. Prevalence:** Nationally, in 2004, 55% of 8<sup>th</sup> graders, 63% of 10<sup>th</sup> graders, and 68% of 12<sup>th</sup> graders reported they were exposed to secondhand smoke in a room or car in the past 7 days.<sup>15</sup>

**Trends:** From 2002 to 2004, there was a significant drop in exposure to secondhand smoke in a room or car for 8<sup>th</sup> and 12<sup>th</sup> graders.

**Disparities:**

- **Grade:** Older students were more likely than 8<sup>th</sup> graders to report they had been exposed to secondhand smoke in the past 7 days (p<0.001) (Table 49).
- **Race/ Ethnicity:** There were significant differences in students reporting they had been exposed to secondhand smoke in the past 7 days by race/ethnicity (p =0.003) (Table 49). See technical notes on p values and confidence intervals for further use of the data in Table 49.
- **Disability:** Youth with disabilities were significantly more likely to report exposure to secondhand smoke than youth without disabilities.(p<0.001) (Table 49).

**See Services Chapter on Tobacco and Treatment for Youth**

<sup>14</sup> Department of Health and Human Services (US). Healthy People 2010: Understanding and Improving Health. 2nd edition. Washington, DC: US Government Printing Office; November 2000

<sup>15</sup> National Youth Tobacco Survey 2004